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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,522	06/30/2003	Robert J. Friday	6561/53768	4439

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EXAMINER	
CAO, HUEDUNG X	
ART UNIT	PAPER NUMBER
2821	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/611,522	FRIDAY, ROBERT J.	
	Examiner	Art Unit	
	Huedung X. Cao	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over LINDENMEIER (USP 6,768,457) in view of LINSAY et al. (USP 6,085,076).

As per claim 1, Lindenmeier teaches the claimed "apparatus for enhancing operation of wireless network environment, comprising "a plurality of directional antennas oriented radially about an axis, wherein the plurality of directional antennas have substantially non-overlapping patterns relative to each other, wherein the peak gains of the plurality of directional antennas are oriented about the axis and offset relative to each other at an angle substantially equal to 360/N, where N is the number of directional antennas in the plurality of directional antennas; wherein the plurality of directional antennas are each operative to transducer a radio frequency signal and provide an output signal corresponding to the radio frequency signal" (Lindenmeier, column 9, lines 38-44);

a switch operatively connected to the plurality of antennas and operative to switch between the antennas in response to control signals (Lindenmeier, column 9, lines 32-37);

a detector operative to detect at least one signal attribute of the output signals provided by the directional antennas (Lindenmeier, Level testing devices 25); and

an antenna selection module operative, to provide control signals to the switch designating a selected directional antennas in the plurality of directional antennas, evaluate the respective output signals provided by the selected antennas, and select a directional antennas from the plurality of antennas for receiving the radio frequency signal associated with the wireless frame (Lindenmeier, column 13, lines 15-64). It is noted that Lindenmeier does not teach the selection is performed using the "preamble of a wireless frame". However, Lindsay teaches that such use of preamble in selection of received signals is well known (Lindsay, column 8, lines 40-50). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Lindsay, to configure Lindenmeier's apparatus as claimed because the use of preamble in selection of signals increases the system efficiency and reduces the processing time.

Claim 2 adds into claim 1 "a radio module operatively connected to the switch for receiving output signals from one of the plurality of directional antennas selected by the antenna selection module" which Lindenmeier teaches in column 12, lines 22-57 in the OFDM signal modulation.

Claim 3 adds into claim 1 "the radio module is operative to demodulate the received output signals into digital data streams" which Lindenmeier teaches in column 13, lines 15-16 of the digital data.

Claim 4 adds into claim 2 "a data link control unit operative to process the digital data streams and identify frames from the digital data streams" which Lindenmeier teaches in column 10, lines 26-66.

Claim 5 adds into claim 4 "the antenna selection module is further operative to identify the selected directional antenna to the data link control unit, and wherein the identified frames include a source address, and wherein the data link control unit is operative to store the identified directional antenna in association with the source address in the frames in a data structure" which Lindenmeier teaches in column 12, line 22 to column 13, line 14.

Claim 6 adds into claim 5 "the data link control unit is operative to compose a frame for transmission to a destination, retrieve the antenna identifier associated with the destination address in the data structure, transmit control signals to the switch designating the retrieved antenna for use in transmitting the composed frame" which Lindenmeier teaches in column 13, lines 38-64.

Claim 7 adds into claim 5 "the data link control unit is operative to transmit a frame acknowledging the received frame" which the cited references do not teach. However, it would have been obvious to send an acknowledgement signal when received a frame because it reduces the confusion in signal transmission and increases the efficiency of communication.

Claim 8 adds into claim 7 that "the acknowledging frame is transmitted using the antenna selected to receive the frame," which the cited references do not teach. However, it would have been obvious to send an acknowledgement signal when received a frame using the selected antenna because it notifies the transmitter of the selected receiving antenna in signal transmission and increases the efficiency of communication.

Claims 9-11 add into claim 1 "at least one directional antenna is a patch antenna, a yagi antenna, and a parabolic antenna," respectively which the cited references do not teach. However, it would have been obvious to use one of the patch, yagi, and parabolic antennas because it provides the efficiency for the system with its application matching the specific antenna type.

Claim 12 adds into claim 1 "the plurality of directional antennas is configured to maximize the coverage area provided by the plurality of antennas" which Lindenmeier teaches in column 4, lines 34-54.

Claim 13 adds into claim 1 "the plurality of directional antennas are configured to provide radio frequency coverage in all directions" which Lendenmeier teaches in column 5, lines 1-25.

Claim 14 adds into claim 1 "the switch, in a listen mode, is operative to switch between the directional antennas before a wireless frame is detected" which the cited references do not teach. However, it would have been obvious to have the switch performed during the listen mode because it reduces the processing time and increases the efficiency of transmission to a real time response.

Claims 15-19 claim a method based on the apparatus of claims 1-14; therefore, they are rejected for the same reason.

Claim 20 claims the apparatus of claim 1 using the orthogonal frequency division multiplexed (OFDM) module (Lindenmeier, column 9, lines 48-56); therefore, it is rejected for the same reason.

Response to Arguments

3. Applicant's arguments filed 09/06/05 have been fully considered but they are not persuasive.

(a) On page 6 of the remark, it appears that applicant is arguing that neither Lindenmeier nor Lindsay disclose or suggest a plurality of directional antennas oriented radially about an axis, having substantially non-overlaping antenna patterns. Rather, Lindenmeier discloses a plurality of antennas where the antennas are oriented to point inwardly around a circular perimeter. The examiner disagrees with this assertion. The pharse "oriented radially about an axis" is not limiting to whether the antennas are oriented to point inwardly or outwardly; therefore, it still read on applicant's claimed language.

(b) Lindenmeier does not disclose the selection of a directional antenna for receiving the remainder of the wireless frame which is not correct Lindenmeier does teach the selection of a directional antenna in column 13, lines 15-64.

Inquiries

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huedung Cao whose telephone number is (571) 272-1939.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong, can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Huedung Cao
Patent Examiner

WILSON LEE
PRIMARY EXAMINER